UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/849,746	09/05/1997	URS LOHER	LUDE14.313	4225

3624 7590 05/23/2007

VOLPE AND KOENIG, P.C.
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
DANIELS, MATTHEW J	

ART UNIT	PAPER NUMBER
1732	

MAIL DATE	DELIVERY MODE
05/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	08/849,746	LOHER ET AL.	
	Examiner	Art Unit	
	Matthew J. Daniels	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,16 and 27-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,16 and 27-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This application has been transferred to Matthew J. Daniels.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Rejections over Shimada (EP 0 373 294)

2. **Claims 1-4, 11-14, 28-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 373 294 (hereinafter "Shimada") in view of Bergua (USPN 3804802). **As to Claim 1,** Shimada teaches a process for manufacturing components that could be used as medical components made of fiber-reinforced thermoplastic materials (8:10-25), where a blank formed of fibers and thermoplastic materials is first pre-finished (8:14-16), and the blank is brought into a final form of a component in a negative mold (8:26-30), under pressure (12:1-13), in a hot forming process (8:28) comprising the steps of:

Heating the entire blank to a forming temperature with a plastic flow consistency in a heating stage (11:40-45),

Pressing the heated blank into the negative mold using a pressing head (Fig. 9, item 90), and shaping the blank in the negative mold (Fig. 10) by virtue of the entire blank flowing from the heating stage into and filling up the negative mold (Figs. 9 and 10).

Shimada does not specifically teach (a) the heating stage located outside the negative mold, and (b) pressing the heated blank at a speed of 2 mm/sec to 80 mm/sec. However, these aspects of the invention would have been prima facie obvious for the following reasons:

(a) Shimada teaches heating prior to pressing into the negative mold (11:40-12:5), which is interpreted to read on the claimed limitation. However, in the alternative, this limitation is drawn to a difference in the order of performing process steps disclosed by the prior art, namely heating and inserting into the mold. However, any order of performing process steps is generally considered to be obvious in the absence of unexpected results. *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959). See also *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946); *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930).

(b) Bergua teaches that it is known to use a ram speed of 50 inches/min (12:39) for injecting a composite material of thermoplastic (5:16-31) and fiber reinforcement (5:12-15). 50 inches/min is the equivalent of 1270 mm/min, which is the equivalent of 21.2 mm/sec, and appears to be a conventional ram head speed.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Bergua into that of Shimada in order to provide rapid and complete filling of the mold of Shimada.

As to Claim 2, Shimada teaches a process for manufacturing components which could be used as medical components and which would be under stress due to the compression molding

process, made of fiber-reinforced thermoplastic materials (8:10-25), where a blank is formed with a fiber proportion of greater than 50% by volume (1:40-42, 80% by weight would exceed 50% by volume) using continuous fibers (12:18) and is pre-finished (11:40), the blank is brought into a final form of a component in a negative mold (12:1-13), under pressure (12:1), in a hot forming process (11:40-12:13), comprising:

Heating the entire blank to a forming temperature with plastic flow consistency in a heating stage (11:45-46);

Pressing the heated blank using a pressing head that travels (12:1);

Shaping the blank in the negative mold by virtue of the entire blank flowing from the heating stage into and filling up the negative mold (12:1-13).

Shimada is silent to (a) the heating stage located outside the negative mold, and (b) pressing the heated blank at a speed of 2 mm/sec to 80 mm/sec. However, these aspects of the invention would have been prima facie obvious for the following reasons:

(a) This limitation is drawn to a difference in the order of performing process steps disclosed by the prior art, namely heating and inserting into the mold. However, any order of performing process steps is generally considered to be obvious in the absence of unexpected results. *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959). See also *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946); *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930).

(b) Bergua teaches that it is known to use a ram speed of 50 inches/min (12:39) for injecting a composite material of thermoplastic (5:16-31) and fiber reinforcement (5:12-15). 50 inches/min is the equivalent of 1270 mm/min, which is the equivalent of 21.2 mm/sec, and appears to be a conventional ram head speed.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Bergua into that of Shimada in order to provide rapid and complete filling of the mold of Shimada.

As to Claim 3, Shimada teaches forming a fiber reinforced thermoplastic rod and cutting said rod to form a blank (see col. 8, lines 10-30).

As to Claims 4, 11, and 12, Shimada teaches continuous (endless) fibers (Elongated fibers) (2) arranged in a parallel direction (col. 8, lines 15-20), having an orientation of 0 degrees in the blank (Fig. 9, item 2). **As to Claim 13**, it should be noted that Shimada teaches the use of "continuous" fibers having the same length as the resulting molded article. It is submitted that the resulting screw (fasteners) of Shimada are longer than 3 mm, meeting the claimed limitation. **As to Claim 14**, Shimada teaches that the fibers are enclosed by the thermoplastic resin (see Figure 7). **As to Claims 28-31**, Shimada teaches a rod-shaped, circular blank (see Figure 6).

3. **Claims 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada (EP 0 373 294) in view of Bergua (USPN 3804802), and further in view of Gapp (WO 91/02906). Shimada and Bergua teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claims 5 and 6**, Shimada does not specifically teach a laminated blank having fibers oriented in different directions and more than one polymer laminate. However, Gapp teaches a process of manufacturing fiber reinforced thermoplastic components including, forming panels (36) from fiber reinforced thermoplastic material (PEEK), cutting a section (40) from the panel and machining said section (40) to form a machined blank (52) having a head end (54), a shank portion (56) and a tail end (58) (pre-finished blank) (see Figures 1, 4a, 4b).

Further, Gapp teaches that the panel from which the blanks are cut are formed from a plurality of layers (more than one laminate) having fibers oriented in different directions (see page 7, lines 1-10), such as to form a "0/+45/-45/90" layup. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Gapp into that of Shimada as an alternative to using an extruded or drawn fiber reinforced thermoplastic blank because (a) Gapp suggests that the method is designed for compression molding of shapes, particularly screw shapes (Figs. 7-9), which is the process provided by Shimada, and (b) Gapp's preform would provide improved isotropic strength by orienting fibers in a variety of directions (pages 6-7).

4. **Claims 7, 27, and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada (EP 0 373 294) in view of Bergua (USPN 3804802), and further in view of Gutjahr (USPN 5074772). Shimada and Bergüa teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 7**, Shimada is silent to the "push-pull extrusion process". However, Gutjahr teaches that it is known to perform a push-pull extrusion/injection process on a plastic material with glass or carbon fiber reinforcement (1:19-21). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Gutjahr into that of Shimada in order to achieve a particular orientation of fibers and polymer molecules (2:42-51). **As to Claims 27 and 32**, in the method of Gutjahr, the process is performed multiple times and the material is removed from the mold (2:59, removal is inherent to subsequently use the article).

5. **Claims 8 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada (EP 0 373 294) in view of Bergua (USPN 3804802), and further in view of Drotloff (WO 92/10542 with USPN 5342664 used as an English language equivalent, from which citations are provided). Shimada and Bergua teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claims 8 and 10**, Shimada teaches a process comprising the step of heating a thermoplastic-carbon fiber blank (1:30-43) to a forming temperature and then pressing the blank into the negative mold and shaping (11:40-12:13), and the step of cooling below the glass transition temperature in a post-pressure phase would have been implicit (26:34-36). Shimada is silent to the particular forming temperature of 350 C to 450 C and the polyaryl ether ketones reinforced with carbon fibers. However, Drotloff teaches performing composites (8:54-60) of poly(aryl ether ketones) and carbon or glass fibers (8:64) at temperatures of 380 C (10:68). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Drotloff into that of Shimada because (a) Drotloff suggests the preparation and forming process that Shimada provides (8:54-60), and (b) because the particular polymer mixture of Drotloff would provide increased elongation at break, better processability, resistance to solvents, and high moduli (2:19-32).

6. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada (EP 0 373 294) in view of Bergua (USPN 3804802), and further in view of Lee (USPN 5,244,747). Shimada and Bergua teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 9**, Shimada is silent to the carbon or graphite as a release agent. However, Lee teaches that a carbon-based release agent is equivalent to a fluorocarbon-based release agent when

releasing a thermoplastic material (see col. 2, lines 35-40). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Lee into that of Shimada because (a) Lee teaches that a carbon-based release agent is equivalent to fluorocarbon-based release agents when releasing a thermoplastic material, and (b) the release agent of Lee would provide a desirable release action between the article and mold and reduce post-processing operations.

7. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada (EP 0 373 294) in view of Bergua (USPN 3804802), and further in view of Emmanuel (USPN 4,356,230). Shimada and Bergua teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 16**, Shimada is silent to applying a surface seal (surface coating). However, Emmanuel teach a process for molding a coated fiber reinforced plastic article including, providing a fiber reinforced plastic preform, applying coating onto a mold surface and then transferring the coating (surface seal) to the fiber reinforced plastic preform during compression molding of the fiber reinforced plastic preform to form the coated fiber reinforced plastic article (see col. 1, lines 44-63). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Emmanuel into that of Shimada in order to provide a smooth surface on a plastic fiber-reinforced molded part, which would result in an improved product and improved aesthetic quality.

Rejections over JP 02-145327

8. **Claims 1-5, 11-14 and 28-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-145327 in view of Kobayashi *et al.* (US Patent No. 4,356,228) and in further view of Marcune *et al.* (US Patent No. 5,156,588).

JP 02-145327 teaches the basic claimed process for manufacturing fiber reinforced thermoplastic components including, forming a fiber reinforced thermoplastic tubular blank (13), cutting said fiber reinforced thermoplastic tubular blank to form a pre-finished blank (16), positioning said pre-finished blank (16) in a mold (18) (negative mold), heating said pre-finished blank (16) at a given temperature in said mold (18) (heating the entire blank to a forming temperature in a heating stage) and axially compressing said heated pre-finished blank in said mold (18) to obtain said fiber reinforced thermoplastic component (22). Further, JP 02-145327 teaches that the fibers are enclosed by the thermoplastic resin (see Figures 4-6). Therefore, it is submitted that shaping of the pre-finished blank (16) in mold (18) by heating and axial compression occurs by flowing of the heated thermoplastic material of the pre-finished blank during the axial compression stage (shaping the blank in the negative mold by virtue of the entire blank flowing from the heating stage into the negative mold).

Regarding claim 1, JP 02-145327 does not teach heating the blank outside the mold.

Kobayashi *et al.* ('228) teaches a molding process of a fiber reinforced thermoplastic blank including, preheating said blank to a temperature higher than the softening temperature (see col. 4, line 68 through col. 5, line 4) (soft, flowable state) in a hot air furnace oven outside the mold, placing said heated blank between traveling molds and, molding said blank under pressure, said such that said thermoplastic material flows and fills said mold (see col. 7, lines 52-

63). Therefore, it would have been obvious for one of ordinary skill in the art to have preheated the fiber reinforced thermoplastic blank to a soft, flowable state outside the mold and then compression molded said blank as taught by Kobayashi *et al.* ('228) in the process of JP 02-145327 because of known advantages that preheating provides such as, reduced molding time, hence improving productivity and lowering costs.

Further regarding claim 1, JP 02-145327 does not teach pressing speed of 2-80 mm/s. However, in a compression molding process, the pressing speed is well known to be a result-effective variable as evidenced by Kobayashi *et al.* ('228) which teaches a molding process of a fiber reinforced thermoplastic blank including, preheating said blank to a temperature higher than the softening temperature (see col. 4, line 68 through col. 5, line 4) (soft, flowable state) in a hot air furnace oven outside the mold, placing said heated blank between traveling molds at a speed of 4 mm/s and, molding said blank under pressure, said such that said thermoplastic material flows and fills said mold (see col. 7, lines 52-63). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a compression speed of 4 mm/s as taught by Kobayashi *et al.* ('228) in the process of JP 02-145327 because, Kobayashi *et al.* ('228) teaches that such a speed provides for an aesthetically improved product (see col. 7, lines 60-65) and also because, both references teach compression molding of heated fiber reinforced thermoplastic blanks, hence teaching similar materials and processes.

Further regarding claim 1, it is noted that JP 02-145327 teaches molding of a nylon/glass fiber composite screw. However, whether said screws are used for aerospace or medical applications is a functional limitation. In a claim drawn to a process, recitation of the intended "medical" use of the claimed "screws" step must result in a structural difference between the

claimed process and the prior art in order to patentably distinguish the claimed invention from the prior art. As such, in a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. However, in order to advance prosecution of the instant application, the teachings of Marcune *et al.* ('588) are provided to show that it is well known to make medical components from a nylon/glass fiber composite (see col. 4, lines 30-35). Therefore, it would have been obvious for one of ordinary skill in the art to use a nylon/glass fiber composite as taught by Marcune *et al.* ('588) to make a medical screw using the process of JP 02-145327 in view of Kobayashi *et al.* ('228) because, Marcune *et al.* ('588) specifically teaches that a nylon/glass fiber composite may be used to make medical devices, whereas JP 02-145327 teaches molding of screws made from a nylon/glass fiber composite. Furthermore, it is noted that if the prior art structure, as taught by Marcune *et al.* ('588) is capable of performing the intended use of a medical screw, as claimed, then it meets the claim.

In regard to claim 2, JP 02-145327 teaches continuous (endless) fibers in a proportion of 70% by weight. It is submitted that a fiber proportion of 70% by weight is more than 50% by volume.

Specifically regarding claim 3, JP 02-145327 teaches forming a fiber reinforced thermoplastic tubular blank (13) and cutting said fiber reinforced thermoplastic tubular blank to form a pre-finished blank (16) prior to heating and axially compressing said heated pre-finished blank in said mold (18) to obtain said fiber reinforced thermoplastic component (22) (hot-forming process).

Regarding claim 4, JP 02-145327 teaches continuous (endless) fibers that are knitted as a braided string (13) and as such correspond to at least a length of the blank.

In regard to claims 5 and 12, JP 02-145327 teaches continuous (endless) fibers that are knitted as a braided string (13) and as such form layers of different fiber orientation along the axial axis, said orientation being between 0^{o}-90^{o} (see Fig. 1B).

Regarding claim 11, JP 02-145327 teaches continuous (endless) fibers that are parallel to the axis of the blank (see Figures 4-6).

Specifically regarding claim 13, it should be noted that JP 02-145327 teaches the use of "continuous" fibers having the same length as the resulting molded article. It is submitted that, the fibers used in the process of JP 02-145327 are longer than 3 mm in order for the screws to function as described.

In regard to claim 14, JP 02-145327 teaches that the fibers are enclosed by the thermoplastic resin (see Figures 4-6).

Specifically regarding claims 28-31, JP 02-145327 teaches a rod-shaped, circular blank (see Figure 2).

9. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-145327 in view of Kobayashi *et al.* (US Patent No. 4,356,228) and in further view of Marcune *et al.* (US Patent No. 5,156,588) and Gapp *et al.* (WO 91/02906).

JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) teaches the basic claimed process as described above.

Regarding claim 6, JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) does not teach a laminated blank. Gapp *et al.* (WO 91/02906) teach a process of manufacturing fiber reinforced thermoplastic components including, forming panels (36) from fiber reinforced thermoplastic material (PEEK), cutting a section (40) from the panel

and machining said section (40) to form a machined blank (52) having a head end (54), a shank portion (56) and a tail end (58) (pre-finished blank) (see Figures 1, 4a, 4b). Therefore, it would have been obvious for one of ordinary skill in the art to have formed a laminated fiber reinforced thermoplastic blank as taught by Gapp *et al.* (WO 91/02906) for molding a fiber reinforced thermoplastic component by the process of JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588), as an alternative to using a braided fiber reinforced thermoplastic blank, due to a variety of advantages that a laminated blank provides such as simplicity, cost considerations, simpler equipment requirements, increased process versatility and also because both references teach heating and axial compression of a fiber reinforced thermoplastic blank, regardless of the method by which said blank is obtained. Further, it should be noted that both references teach similar materials, processes and end-products. Furthermore, it is noted that Kobayashi *et al.* ('228) teach a fiber reinforced laminate.

10. **Claims 7, 27, and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-145327 in view of Kobayashi *et al.* (US Patent No. 4,356,228) and in further view of Marcune *et al.* (US Patent No. 5,156,588) and Gutjahr (USPN 5074772).

JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) teaches the basic claimed process as described above.

As to Claim 7, JP 02-145327 is silent to the "push-pull extrusion process". However, Gutjahr teaches that it is known to perform a push-pull extrusion/injection process on a plastic material with glass or carbon fiber reinforcement (1:19-21). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method

of Gutjahr into that of JP 02-145327 in order to achieve a particular orientation of fibers and polymer molecules (2:42-51). **As to Claims 27 and 32**, in the method of Gutjahr, the process is performed multiple times and the material is removed from the mold (2:59, removal is inherent to subsequently use the article).

11. **Claims 8 and 10** rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-145327 in view of Kobayashi *et al.* (US Patent No. 4,356,228) and in further view of Marcune *et al.* (US Patent No. 5,156,588) and Drotloff (WO 92/10542 with USPN 5342664 used as an English language equivalent, from which citations are provided).

JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) teaches the basic claimed process as described above.

As to Claims 8 and 10, JP 02-145327 teaches a process comprising the step of pressing the blank into the negative mold and shaping, but JP 02-145327 does not specifically teach the heating, cooling, or poly(aryl ether ketones). However, Drotloff teaches performing composites (8:54-60) of poly(aryl ether ketones) and carbon or glass fibers (8:64) at temperatures of 380 C (10:68). Cooling to below the glass transition temperature would have been obvious over the method of Drotloff in order to avoid melting or deformation of the part after molding. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Drotloff into that of JP 02-145327 because (a) Drotloff suggests the preparation and forming process that JP 02-145327 provides (translation, page 5, middle), and (b) because the particular polymer mixture of Drotloff would provide increased elongation at break, better processability, resistance to solvents, and high moduli (2:19-32).

12. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-145327 in view of Kobayashi *et al.* (US Patent No. 4,356,228) and in further view of Marcune *et al.* (US Patent No. 5,156,588) and Lee (US Patent No. 5,244,747).

JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) teach the basic claimed process.

Regarding claim 9, JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) do not teach the use of carbon or graphite as a release agent. Lee ('747) teaches that a carbon-based release agent is equivalent to a fluorocarbon-based release agent when releasing a thermoplastic material (see col. 2, lines 35-40). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a carbon-based release agent as an equivalent to a fluorocarbon-based release agent as taught by Lee ('747) in the process of JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) because, Lee ('747) specifically teaches that a carbon-based release agent is equivalent to a fluorocarbon-based release agent when releasing a thermoplastic material, whereas EP 0 373 294 or JP 02-145327 in view of Kobayashi *et al.* ('228) teach molding of thermoplastic materials and also because a release agent provides for an improved process by reducing post-processing operations.

13. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-145327 in view of Kobayashi *et al.* (US Patent No. 4,356,228) and in further view of Marcune *et al.* (US Patent No. 5,156,588) and Emmanuel *et al.* (US Patent No. 4,356,230).

JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) teaches the basic claimed process as shown above.

Regarding claim 16, JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) do not teach applying a surface seal (surface coating). Emmanuel *et al.* ('230) teach a process for molding a coated fiber reinforced plastic article including, providing a fiber reinforced plastic preform, applying coating onto a mold surface and then transferring the coating (surface seal) to the fiber reinforced plastic preform during compression molding of the fiber reinforced plastic preform to form the coated fiber reinforced plastic article (see col. 1, lines 44-63). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to transfer a coating (surface seal) as taught by Emmanuel *et al.* ('230) in the process of JP 02-145327 in view of Kobayashi *et al.* ('228) and in further view of Marcune *et al.* ('588) because Emmanuel *et al.* ('230) specifically teach that such a process allows for an improved aesthetic quality of the resulting fiber reinforced molded article, hence providing for an improved product.

Response to Arguments

14. Applicant's arguments filed 6 March 2007 have been fully considered but they are not persuasive or are moot in view of the new grounds of rejection set forth above. <u>The arguments appear to be on the following grounds</u>:

a) The rejection is based on hindsight.

b) EP 0 373 294 ignores the sterility and precision requirements for medical applications.

c) There is no suggestion to combine the aircraft, sheet-forming, and medical arts, the cited references are non-analogous, and there is no expectation of success.

d) None of the references teach the pressing head speed. Kobayashi teaches closing molds at the claimed speed, but has nothing to do with an injection molding type process to inject the pre-heated blank that is at a plastic flow consistency into a mold cavity.

e) Claim 7 is patentable because none of the references disclose a push-pull process.

15. These arguments are not persuasive for the following reasons:

a) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

b) No sterility and precision requirements are claimed, thus this argument is not commensurate with the scope of the claim. Additionally, sterilization is believed to be a post-formation process, which would not materially affect the claimed method of making because it occurs after the process. The articles provided by the cited references are capable of performing the claimed intended use as "medical components".

c) The references should be considered more broadly for their teachings of fiber composite materials or shaping methods for fiber composite materials, which are asserted to be the fields of

endeavor.

d) Applicant's remarks assert that the claimed process is not a compression molding process, but is instead an injection molding process. The exact name of the forming process, whether an injection or compression process, is not clear. In either case, material is pressed into a die (See instant Fig. 6). Applicant's remarks appear to be directed against Kobayashi alone, but do not consider the similarity in molding processes already described in either JP 02-145327 or the Shimada reference. However, in order to more fully address Applicant's remarks a new rejection is set forth above in view of Bergua who teaches the claimed speed and specifically disclosing the ram speed in an "injection" process (12:38). Thus, it is demonstrated in Kobayashi that a compression molding process having the claimed closing speed is known. Alternatively, Bergua teaches that it is known to press and inject composite material into a mold at the claimed speed. No criticality is presently attributed to this variable.

e) This argument is believed to be fully addressed by the new reference cited above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew J. Daniels

A.U. 1732

21 May 2007